

Droplet Electro-microfluidics for Assay Automation and Heterogeneous 3D/4D (Bio-)Printing

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Abstract

Generation and actuation of droplets with a wide range of volume from pL to μL are of great interest and significance in biomedical applications. In this talk, I will introduce several electromicrofluidics techniques to manipulate droplets of various fluids and hydrogels by programmable local electric fields on an electrode array without using microchannels nor micropumps. The agile actuations of droplets with appropriate volume and ingredients enable the automation of bioassays and enhance the heterogeneity of bioprinting. The capability and potential of digital assays for single entities using electromicrofluidics will be briefly discussed.

Bio

Shih-Kang Scott Fan is a professor of Mechanical and Nuclear Engineering at Kansas State University. He received his B.S. degree from National Central University, Taiwan in 1996, and M.S. and Ph.D. degrees from the University of California, Los Angeles (UCLA) in 2001 and 2003, respectively. In 2004 he joined the faculty of National Chiao Tung University, Taiwan as an assistant professor and was promoted to an associate professor in the Institute of Nanotechnology and the Department of Materials Science. From 2012-2019 he was with the Department of Mechanical Engineering and the Center for Biotechnology at National Taiwan University, Taiwan as an associate professor, professor and distinguished professor. Dr. Fan is an elected Fellow of the Royal Society of Chemistry (RSC).